

GALLING OF ARDISIA SEEDLINGS

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Ardisia crenata Sims is grown commonly outdoors in Florida as a woody shrub and is attractive for its shiny dark green foliage and clusters of red berries. Seedlings are grown commercially in Florida for use mostly in terrariums and dish gardens.

SYMPTOMS. One of the most serious problems limiting *Ardisia* production in the nursery is the occurrence of galls at the cotyledonary node approximately 3 to 4 months after planting with subsequent gall production in the leaf axils. The maximum number of seedlings with galls is reached 6 months after planting (6). The galled plants usually develop no more than 4 dark green leaves and remain stunted (fig. 1). The extent of galled plants from a seed planting may reach 95%.

CAUSAL FACTOR. A soil temperature of 30 C (86 F) or higher has induced gall formation in *Ardisia* seedlings (6). This temperature is well within the range of soil temperatures found in nurseries growing *A. crenata* (6). Very few galled seedlings have been produced in plantings at a soil temperature near 25 C (77 F). Also, gall formation has occurred in seedlings germinated from seed stored at 10 C (50 F) for more than 2 months.

Species of *Ardisia* (*A. crispa* (Thunb.) A. DC. and *A. crenata*) are known to form a foliar symbiotic relationship with certain bacteria which produce cytokinins, growth promoting chemicals (1,2,4,5). These bacteria, which are sensitive to temperatures as low as 32 C (90 F), are necessary for normal plant development by these *Ardisia* species (3). Any interference with this symbiotic relationship apparently can result in poor growth and galled plants (1).



Fig. 1. Six-month-old seedlings of *Ardisia crenata*: A) healthy, B) galled plants showing large galls at cotyledonary node

CONTROL. The frequency of galling can be reduced significantly by planting freshly harvested seed in soils maintained at 25 C (77 F). A soil temperature near 25 C can be obtained by 1) controlling the air temperature, 2) planting during the cooler periods of the year, or 3) maintaining good air circulation to maximize the cooling effect resulting from moisture evaporation from the soil surface. Greenhouses or growing areas having poor air circulation, high humidity, and high temperature should be avoided for successful production of seedlings of A. crenata.

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